

Claims

1. A speech recognition system, comprising:
means for determining the length of a speech portion to be recognised;
5 means for defining a subset of speech portions from a set of stored speech portions in dependence on the determined length; and
recognition means for recognising the speech portion from the subset of speech portions.
- 10 2. A speech recognition system according to claim 1, wherein the subset defining means is arranged to define a subset of speech portions for each speech portion to be recognised.
3. A speech recognition system according to claim 1, wherein the determining
15 means comprises a neural network classifier.
4. A speech recognition system according to claim 3, wherein the neural network classifier comprises a multi-layer perceptron.
- 20 5. A speech recognition system according to claim 1, wherein the set of speech portions comprises a lexicon and the subset of speech portions comprises a sub-lexicon.
6. A speech recognition system according to claim 5, wherein the sub-lexicon
25 comprises speech portions having a length similar to that of the speech portion to be recognised.
7. A speech recognition system according to claim 6, wherein the sub-lexicon
30 comprises speech portions having a length which is the same as that of the speech portion to be recognised.

8. A speech recognition system according to claim 5, wherein the length of the speech portions in the sub-lexicon is determined in accordance with a confidence level associated with the length determining means.

5 9. A speech recognition system according to claim 1, wherein the speech portion comprises a word and the length determining means is arranged to detect the number of phonemes in the word.

10. A speech recognition system, comprising:

10 a memory for storing a lexicon of speech portions;

a counter arranged to determine the length of a speech portion to be recognised;

a sub-lexicon definition module arranged to define a sub-lexicon from the lexicon of speech portions in dependence on the determined length; and

15 a recognition module for recognising the speech portion from the sub-lexicon of speech portions.

11. A portable communications device comprising a speech recognition system according to claim 1.

12. A method of speech recognition, comprising:

determining the length of a speech portion to be recognised;

defining a subset of a set of stored speech portions in dependence on the determined length; and

25 recognising the speech portion from the subset of speech portions.

13. A speech recognition system in which an utterance to be recognised is represented as a sequence of phonetic segment models in which a transition probability represents the probability of the occurrence of a transition between the models, comprising:

30 means for biasing the transition probabilities in dependence on the length of the utterance.

14. A speech recognition system according to claim 13, wherein the biasing means comprise means for applying a transition bias to each of the transition probabilities between a plurality of phonetic segment models.

15. A speech recognition system according to claim 14, operable to recognise utterances from a recognition vocabulary, wherein the transition bias is calculated as the transition bias which maximises recognition performance on a validation data set which represents the recognition vocabulary.

16. A speech recognition system according to claim 15, wherein the validation data set has the same vocabulary as the recognition vocabulary.

17. A speech recognition system according to claim 13, further comprising means for estimating the number of phonetic segments in the utterance to be recognised.

18. A speech recognition system according to claim 17, wherein the estimating means comprises a speaker specific rate of speech estimator.

19. A speech recognition system according to claim 17, wherein the estimating means comprises a Free Order Viterbi decoder.

20. A speech recognition system according to claim 17, wherein the estimating means comprises a neural network classifier.

21. A speech recognition system according to claim 17, wherein the transition bias is set in response to the result of the estimating means.

22. A speech recognition system according to claim 21, comprising table look-up means for setting the transition bias in accordance with the number of phonetic segments in the utterance.

23. A speech recognition system according to claim 22, comprising direct setting means for setting the transition bias as proportional to the number of phonetic segments in the utterance.

5 24. A speech recognition system according to claim 23, wherein the direct setting means is arranged to set the transition bias to be equal to the number of phonetic segments in the utterance.

25. A speech recognition system according to claim 13, wherein the or each
10 phonetic segment comprises a phoneme.

26. A speech recognition system according to claim 13, wherein the or each utterance comprises a word.

15 27. A speech recognition system in which an utterance to be recognised is represented as a sequence of phonetic segment models in which a transition probability represents the probability of the occurrence of a transition between the models, comprising:

20 a phonetic segment estimator arranged to output an estimate of the number of phonetic segments in the utterance; and

a processing module for applying a transition bias to the transition probability in response to the output of the estimator.

28. A portable communications device including a speech recognition system
25 according to claim 13.

29. A method of speech recognition in which an utterance to be recognised is represented as a sequence of phonetic segment models in which a transition probability represents the probability of the occurrence of a transition between the
30 models, the method comprising biasing the transition probabilities in dependence on the length.

32. A method according to claim 31, comprising calculating the transition bias in parallel with the decoding of the sequence of phonetic segment models.